REMARKS

The present response is l to the Office Action mailed in the above-referenced case on October 28, 2004. Claims 1, 3, 4, 9, 10, 12-15 and 26-28 are presented for examination. Claims 1, 3 and 4 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Rekhter et al. ("Tag Switching Architecture"), hereinafter Rekhter, in view of Davie et al. ("Explicit Route Support in MPLS"), hereinafter Davie, and further in view of Farinacci et al. ("Tag Switching Architectural Overview", IEEE, December 1997) hereinafter Farinacci. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rekhter, Davies and further in view of Farinacci. Claims 26-28 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Rekhter, Davies and further in view of Farinacci. Finally, claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rekhter, Davies and further in view of Farinacci and applicant's admitted prior art.

Applicant has carefully studied the prior art presented by the Examiner in this case, and the Examiner's statements in the instant Office Action. In response, applicant herein cancels all standing claims, replacing them with newly written claims 31-36. Applicant has believes there may be confusion in examination due to percieved ambiguity in the claim language, and the new claims correct this possible problem, making the claimed subject matter more clear and unambiguous.

Applicant's newly written set of claims positively recite a label-switching sub-network with one ingress node and one egress node, with at least two nodes internal to the sub-network connected by a plurality of parallel links, a method for routing packets through the sub-network and the parallel links while ensuring in-order delivery for unique packet flow defined by unique source/destination pairs, comprising the steps of; (a) creating a sufficient number of label-switched paths (LSPs) from the ingress node to the egress node that each packet flow may have a unique LSP; and (b) associating each packet flow with one of the created LSPs.

In the Examiner's remarks regarding Farinacci, the Examiner states that Farinacci teaches creating multiple paths between the ingress and the egress node (page 1976, col. 2, lines 18-58). Applicant points out that Farinacci teaches that under certain conditions,

it is possible to bind a tag not just to a single route but also to a group of routes, creating a many-to-one mapping between routes and tags. Farinacci teaches that it is quite possible that the switch uses the router as the next hop not just for one route but also for a group of routes. Under these conditions, the switch does not have to allocate distinct tags to each of these routes—one tag would suffice. When a tag switch adds a tag to a previously untagged packet, the tag could be associated with either the route to the destination address carried in the packet or the route to some other tag switch along the path to the destination (in some cases, the address of that other tag switch could be gleaned from network-layer routing protocols). The latter option provides yet another way of mapping multiple routes into a single tag. However, this option either is dependent on particular routing protocols or would require a separate mechanism for discovering tag switches along a path.

Applicant argues that in the teachings of Farinacci, because one tag suffices for many routes, individual parallel paths are not created and maintained as claimed, wherein out-of-order routing may occur as discussed in the background portion of applicant's specification. In applicant's invention, optimal distribution of traffic over multiple links in an individual route using MPLS is achieved by creating multiple label-switched paths (LSPs) between nodes. In one embodiment, the number of LSPs needed to create the path from the ingress router A to the egress router I is equal to the least common multiple (LCM) of the number of links on each individual hop. For example, for the path A-B-G-I, the number of links on the A-B hop is 5, the number of links on the B-G hop is 3, and the number of links on the G-I hop is 2. Therefore, the number of LSPs generated for the A-B-G-I path should be a minimum of the least common multiple (LCM) of 5, 3 and 2; LCM (5,3,2) = 30. The A-B hop would divide the 30 LSPs into five groups of six; the B-G hop would divide the 30 LSPs into three groups of ten; and the G-I hop would divide the LSPs into two groups of fifteen. Clearly, Farinacci deals with physical routes between routers and switches and doesn't create multiple LSPs within a route as claimed.

Applicant argues that conventional MPLS suffers a drawback in that, with conventional MPLS, it is relatively inefficient to set up multiple parallel paths to distribute traffic over multiple parallel physical links. In particular, each individual path

needs to be independently signaled, i.e., set up. This signaling becomes particularly inefficient when there are a large number of potential parallel paths and obviously, Farinacci fails to teach creating such LSPs for this same reason.

In view of applicant's above claim amendments and arguments presented independent claims 31-36 are clearly and unarguably patentable over the prior art references provided by the Examiner, either singly or in any combination.

It is therefore respectfully requested that this application be reconsidered, the claims be allowed, and that this case be passed quickly to issue. If there are any time extensions needed beyond any extension specifically requested with this amendment, such extension of time is hereby requested. If there are any fees due beyond any fees paid with this amendment, authorization is given to deduct such fees from deposit account 50-0534.

Respectfully Submitted,
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